SYSTEM AND METHOD FOR STORING DATA IN AN UNPATTERNED, CONTINUOUS MAGNETIC LAYER

ABSTRACT OF THE INVENTION

Digital information is stored in an unpatterned magnetic film, using the inherent, natural properties of the domain walls in ferromagnetic materials to write data on an unpatterned magnetic film. Data is read from the unpatterned magnetic film using magnetic tunneling junctions (MTJs). To achieve sufficient thermal stability, the magnetic fields required to change the orientation of these magnetic regions may be much larger than can be provided by currents passing through wires. This larger magnetic field is achieved by using the domain wall fringing field generated at the boundary between two magnetic domain walls. The magnetic regions are written by using the fringing fields from magnetic domain walls in neighboring magnetic wires. These wires are brought close to the magnetic storage layer where the magnetic storage regions are to be written.